VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a **Minor, Industrial** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9VAC25-260. The discharge results from the operation of a water treatment plant. This permit action consists of updating boilerplate and adding nutrient limits.

1. **Facility Name and Address:** **SIC Code:** 4941

Clifton Forge Water Treatment Plant
P.O. Box 631
Clifton Forge, VA 24422

Location: 2500 Sulfur Spring Road, Clifton Forge 24422 (Alleghany County)

2. **Permit No. VA0006076** **Expiration Date:** October 15, 2014

3. **Owner Contact:** Name: Robert R. Irvine
Title: Superintendent
Telephone No.: (540) 863-2522

4. Application Complete Date: April 18, 2014
Permit Drafted By: Kevin A. Harlow Date: September 4, 2014
DEQ Regional Office: Blue Ridge Regional Office - Roanoke
Reviewed By: _____ Date:

5. **Receiving Waters Classification:**
Receiving Stream: Smith Creek
Basin: James River (Upper) Subbasin: N/A Section: 12 Class: VI Special Standards: None
7-Day, 10-Year Low Flow: 0.00 MGD 1-Day, 10-Year Low Flow: 0.00 MGD
30-Day, 5-Year Low Flow: 0.00 MGD Harmonic Mean Flow: 0.41 MGD
30-Day, 10-Year Low Flow: 0.00 MGD
Tidal: No On 303(d) list?: No

6. **Licensed Operator Requirements:** None

7. **Reliability Class:** N/A

8. **Permit Characterization:**
( ) Private ( ) Federal ( ) State (X) POTW
( ) Possible Interstate Effect ( ) Interim Limits in Other Document

9. **Treatment Provided:**
See attached site inspection report and flow diagram (**Attachment A**).

The Clifton Forge Water Treatment Plant (WTP) produces potable water for distribution to the Town of Clifton Forge and portions of Alleghany County. The Smith Creek Reservoir supplies the raw water for the treatment plant. Copper sulfate is used to control algae in the reservoir during the spring and summer. Disinfection is accomplished with pre-chlorination of the raw water in the mixing basins and post-chlorination in the clearwell. Lime and aluminum sulfate (or similar chemical) are added in the

mixing basins to enhance settling in the sedimentation basins. The water is also fluoridated. After the sedimentation basins, the water passes through rapid sand filters. Lime is added after filtration for corrosion control and the finished water is stored in a clearwell. Sediment in the reservoir, particularly near the water intake, may be dredged and removed as needed to maintain the water intake. The dredged material is removed and placed in filter bags or similar filter media for dewatering.

Wastewater is generated from the backwashing of the filters, blowdown of the mixing basin, blowdown of the sedimentation basins, and the filtrate from dewatering dredged material. The wastewater from the various activities is directed to a single settling pond. The wastewater is held in the pond to allow for settling. Once visually inspected by the operator, a gate valve is opened and the wastewater is discharged from the top of the pond through a floating discharge pipe. The accumulated solids are transferred as need to an unlined long-term sludge storage pit upgradient of the settling pond. The solids are allowed to drain in the pit. The solids have never been removed from the pit.

10. **Sewage Sludge Use or Disposal:** Settled sludge is periodically removed from the settling pond and transferred to an unlined pit where the solids are allowed to dewater. No solids have been removed from this pit in the 20+ years that the pit has been in operation, although capacity is not an issue. A 1996 chemical analysis of the sludge is included in **Attachment G**.

11. **Discharge(s) Location Description:**
Name of Topo: Clifton Forge - VA (See **Attachment C**)
Quadrangle Number: 159D
Latitude (Outfall 001): 37° 50’ 00” Longitude (Outfall 001): 79° 50’ 17”

12. **Material Storage:** Chemicals such as chlorine, flouride, alum, and lime are stored indoors where the mixing/addition occurs.

13. **Ambient Water Quality Information:**
The water body ID for this receiving stream is VAW-I09R. A copy of the flow frequency determination memo for the discharge is included in **Attachment D**. The receiving stream for Outfall 001 is Smith Creek on the USGS Clifton Forge Quadrangle topographic map. The flow frequencies are 0.00 mgd for the 1Q10, 0.00 mgd for the 7Q10, 0.00 mgd for the 30Q5, 0.00 mgd for the high flow 7Q10, and 0.41 mgd for the harmonic mean.

Ambient water quality data on Smith Creek has been collected at sampling station 2-SMH000.08 at Ridgeway Street in Clifton Forge. The pertinent data for permit reissuance is included in **Attachment E**.

The facility discharges to Smith Creek at river mile 3.31. Smith Creek at the discharge point is not a 303(d) listed segment. However, Smith Creek is upstream in the same watershed as multiple impairments.

The fish consumption use is impaired for approximately 12.43 miles of the Jackson River from the Covington water intake downstream to just above the Lowmoor community due to PCB contamination in fish tissue. A Total Maximum Daily Load (TMDL) study is scheduled for completion in 2020.

A 12.43 mile segment of the Jackson River from the Covington water intake downstream to just above the Lowmoor community is impaired for bacteria. A TMDL study is scheduled for completion in 2020.

The EPA approved the Jackson River Benthic TMDL on 7/21/2010 for the impaired section of the Jackson River (10R-01-BEN) extending for 24.18 miles of the Jackson River from Westvaco main processing outfall downstream to the confluence of Karnes Creek. This benthic TMDL report also evaluates the dissolved oxygen impairment in this same segment. Total nitrogen and total phosphorus allocations have been assigned to point source dischargers in the watershed. Loading limits equal to the TMDL WLA have been included in the permit.

14. **Antidegradation Review and Comments:**
Tier: 1. _____ 2 __X_____ 3

The State Water Control Board's Water Quality Standards (WQS) (9 VAC 25-260-30) provide all state surface waters one of three levels of antidegradation protection. For Tier I, existing uses of the water body and the water quality must be maintained. A Tier II water body has water quality that is better than the narrative and numeric water quality criteria. Significant lowering of the water quality of a Tier II water is not allowed without an evaluation of the economic and social impacts, as required by Water Quality Standards, 9 VAC 25-260-30. A Tier III water body is an exceptional water body that is designated by regulation. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with the Tier determination. Smith Creek is a perennial stream and is not listed on Part 1 of the 303(d) list for exceedances of water quality criteria (See **Attachment E**). Smith Creek is determined to be a Tier II water, and no significant degradation of existing quality is allowed. This determination is based on the fact that there are no data to indicate that this water is not better than the standards for all parameters that the Board has adopted criteria.

For purposes of aquatic life protection, "significant degradation" means that no more that 25% the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10% of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The significant degradation baseline (antidegradation baseline) is calculated for each pollutant as follows:

Antidegradation baseline (aquatic life) = 0.25 (WQS – existing quality) + existing quality

Antidegradation baseline (human health) = 0.10 (WQS – existing quality) + existing quality

Where:
"WQS" = Numeric criterion listed in 9 VAC 25-260-5 et seq. for the parameter analyzed
"Existing quality" = Concentration of the parameter being analyzed in the receiving stream, including the facility's existing discharge.

These "antidegradation baselines" become the new water quality criteria in Tier II waters and effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines at the perennial point for each pollutant. Antidegradation baselines have been calculated as described above and included in **Attachment F**.

15. **Site Inspection:**
Date: 3/18/2014 Performed By Gerald A. Duff
See **Attachment A** for a copy of the site inspection.

16. **Effluent Screening and Limitation Development:**
DEQ Guidance Memorandum 00-2011 was used in developing all water quality based limits pursuant to water quality standards (9 VAC 25-260-5 et seq). Refer to **Attachment F** for the facility wasteload allocation spreadsheet and effluent limit calculations. See **Table 1** for a summary of the effluent limitations and monitoring requirements associated with the permit parameters.

Reduced Monitoring: All permit applications received after May 4, 1998, are to be considered for reduction in effluent monitoring frequency. GM 98-2005 states that "only facilities having exemplary operations that consistently meet permit requirements should be considered for reduced monitoring." Although the facility has not received any warning letters or notices of violation during the current permit term (the last being Notice of Violation #W2008-11-W-1004 in 2008), monitoring is not reduced at this time due to the addition of filtrate from the dredged material filter bags as a wastewater source.

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Flow: Flow is to be estimated once per discharge month. This sample type is in accordance with the VPDES Permit Manual. The sample type and frequency are unchanged from the previous permit.

pH: pH limits of 6.0 S.U. minimum and 9.0 S.U. maximum are based on water quality standards (9 VAC 25-260-5 et seq.) for the receiving stream. Monitoring using grab samples is consistent with the current permit and in accordance with the sampling guidelines in the VPDES Permit Manual. The limit, sample type, and monitoring frequency are unchanged from the previous permit.

Total Suspended Solids: A BPJ limit of 30 mg/L monthly average and 60 mg/L daily maximum is consistent with the VPDES Permit Manual. The limit, sample type, and monitoring frequency are unchanged from the previous permit.

Total Residual Chlorine: Chlorine is used in the treatment process for disinfection purposes. Based on current agency procedures contained in GM-00-2011, including the agency's WLA and STATS software, a maximum daily and monthly average limit of 11 µg/L is necessary to protect water quality. The WLA and STATS printouts are included in **Attachment F.** The limit, sample type, and monitoring frequency are unchanged from the previous permit.

Total Phosphorus, Total Nitrogen – A section of the Jackson River downstream of the discharge point has been designed as impaired due to benthic life assessments. The Jackson River Benthic TMDL was approved in 2010 and included wasteload allocations for total nitrogen and total phosphorus. Nitrogen and phosphorus wasteload allocations for the growing season have been assigned to all dischargers in the watershed. The growing season is defined in the TMDL as June through October. The growing season allocations for the Clifton Forge WTP are 19.7 lb total nitrogen and 8.9 lb total phosphorus. The allocations are based on a discharge of 0.34 mg/L TN and 0.14 mg/L TP and an average permitted flow of 0.05 MGD. The limitations are calculated for compliance on a seasonal basis annually from monthly monitoring. Monthly load calculations use a minimum of one grab sample. A special condition has been included in Part I.B.6 with the specifics on calculation of the limits from monitored data.

Other Water Quality Limits: Water quality standards monitoring was not required to be performed. The only other data associated with this discharge was included on the 2014 permit

application. Ammonia, cadmium, chromium, copper, lead, mercury, and zinc were all non-detect.

17. **Antibacksliding Statement:**

All limits in this reissuance are at least as stringent as the limits in the previous permit. Therefore, this permit issuance complies with antibacksliding requirements.

18. **Compliance Schedules:**

There will be no compliance schedules included in the reissued permit.

19. **Special Conditions:**

a. **Notification Levels**

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 A for all manufacturing, commercial, mining, and silvicultural dischargers.

b. **Materials Handling/Storage**

Rationale: 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia § 62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

c. **Operations and Maintenance Manual**

Rationale: Required by Code of Virginia § 62.1-44.16; VPDES Permit Regulation, 9 VAC 25-31-190 E, and 40 CFR 122.41(e). These require proper operation and maintenance of the permitted facility. Compliance with an approved O&M manual ensures this.

d. **Compliance Reporting Under Part I.A**

Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

e. Total Maximum Daily Load (TMDL) Reopener
Rationale: Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed it they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

f. Nutrient Reporting Calculations

Rationale: The Jackson River Benthic TMDL requires annual average total nitrogen and total phosphorus limitations for the covered watershed. Monitoring will include the calculation of the monthly total nitrogen and total phosphorus load and of the cumulative annual loads for total nitrogen and total phosphorus for the growing season. This special condition clarifies how monthly and annual concentrations and loadings will be calculated.

g. **Closure Plans**

Rationale: This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or is expected to close. This is necessary to ensure industrial sites and treatment works are properly closed so that the risk of untreated waste water discharge, spills, leaks and exposure to raw materials is eliminated and water quality maintained. Section 62.1-44.21 requires every owner to furnish when requested plans, specification, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purposes of the State Water Control Law

h. **Permit Application Requirement**

Rationale: VPDES Permit Regulation, 9VAC25-31-100.D and 40 CFR 122.21(d)(1) require submission of a new application at least 180 days prior to expiration of the existing permit. In addition, the VPDES Permit Regulation, 9 VAC 25-31-100 E.1 and 40 CFR 122.21 (e)(1) note that a permit shall not be issued before receiving a complete application.

i. **Toxic Management Program**

Rationale: VPDES Permit Regulation, 9VAC25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. See **Attachment H** for the TMP justification memo.

j. **Part II, Conditions Applicable to All Permits**
Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

20. **NPDES Permit Rating Worksheet:** Total Score 65
See **Attachment I** for the EPA Major-Minor Worksheet.

21. **Changes to Permit:**

1) Updated language to reflect the current VPDES permit manual.
2) Added effluent limitations for total nitrogen and total phosphorus to implement the wasteloads allocated by the Jackson River Benthic TMDL. See Table 1 on page 9 of the Fact Sheet, or the EL page of the permit, for the new nutrient limitations and monitoring requirements.
3) Added a Nutrient Reporting Calculations as special condition as Part I.B.6. These condition specifies how to calculate and report monthly and annual nitrogen and phosphorus loads in order to demonstrate compliance with the permit limitations.
4) Added a Closure Plan requirement as special condition Part I.B.7. The VPDES permit manual recommends adding this special condition to all permits.

5) Added a Permit Application Requirement as special condition Part I.B.8. This condition specifies due date of permit application in accordance with Part II.M.
6) The O&M manual special condition (Part I.B.3) no longer requires submittal of a revised manual to DEQ unless requested. The O&M manual still must be updated as before.
7) Due dates for submittal of the test results (or statement that cleanout did not occur) are now specified in Part I.C.1.c.

22. **Variances/Alternate Limits or Conditions:** N/A

23. **Public Notice Information:**

All pertinent information is on file and may be inspected or copied by contacting **Kevin A. Harlow** at:

Virginia DEQ
Blue Ridge Regional Office
3019 Peters Creek Road
Roanoke, Virginia 24019
(540) 562-6700
Kevin.Harlow@deq.virginia.gov

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the DEQ Blue Ridge Regional Office by appointment.

24. **Additional Comments:**

A. **Previous Board Action:** None

B. **Staff Comments:** The discharge is not controversial. The discharge is not addressed in any planning document.

C. **Public Comments**:

25. **303(d) Listed Segments (TMDL):**
The facility discharges to Smith Creek at river mile 3.31. Smith Creek at the discharge point is not a 303(d) listed segment. However, there are four downstream impairments (PCBs, bacteria, benthic (total nitrogen and total phosphorus), and DO) in the Jackson River watershed.

There are two impairments in the downstream 12.43 mile segment of the Jackson River from the

Covington water intake to just above the Lowmoor community. The fish consumption use is impaired due to PCB contamination in fish tissue and it is impaired for bacteria. A TMDL for each of these impairments is scheduled for completion in 2020. No limitations or monitoring requirements for PCBs or bacteria are included in this permit since the Clifton Forge WTP do not discharge the pollutant of concern and is not a likely source for these impairments due to the nature of the process and the location of the water reservoir.

The Jackson River Benthic TMDL was approved by EPA on July 21, 2010 and the State Water Control Board on December 9, 2010. The impaired segment (I09R-01-BEN) of the Jackson River extends 21.14 miles from the Westvaco main processing outfall downstream to the confluence of Karnes Creek. This benthic TMDL report also addresses the dissolved oxygen impairment in this same segment. The report includes wasteload allocations for Clifton Forge WTP of 8.9 lb of total phosphorus in the growing season and 19.7 lb of total nitrogen in the growing season, where the growing season is defined in the TMDL as June through December. These wasteload allocations have been included as limits in this permit reissuance. No dissolved oxygen allocations were assigned to this facility.

Table 1. EFFLUENT LIMITATIONS FOR INDUSTRIAL PERMITS

( ) Interim Limitations
(X) Final Limitations

Outfall 001

Effective Dates - From: Effective Date
To: Expiration Date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow, MGD	NA	NL	NA	NA	NL	1/D-M	Est.
pH, standard units	3	NA	NA	6.0 s.u.	9.0 s.u.	1/D-M	Grab
Total Suspended Solids, mg/L	2	30 mg/L NA kg/d	NA	NA	60 mg/L NA kg/d	1/D-M	5G/8HC
Total Residual Chlorine, µg/L	3	11 µg/L NA kg/d	NA	NA	11 µg/L NA kg/d	1/D-M	Grab
Total Nitrogen (TN) (June-Oct)	4	NL mg/L, NL lb/d	NA	NA	NA	1/D-M	Grab
Total Phosphorus (TP) (June-Oct)	4	NL mg/L, NL lb/d	NA	NA	NA	1/D-M	Grab
TN, monthly load (June-Oct)	4	NL lb/d	NA	NA	NA	1/D-M	Calculated
TP, monthly load (June-Oct)	4	NL lb/d	NA	NA	NA	1/D-M	Calculated
TN, total load (June-Oct)	4	NA	NA	NA	19.7 lb	1/D-M	Calculated
TP, total load (June-Oct)	4	NA	NA	NA	8.9 lb	1/D-M	Calculated

NA = Not Applicable
NL = No Limitations
1/D-M = Once per month in which a discharge occurs
5G/8HC = Eight hour composite- consisting of grab samples collected at hourly intervals until the discharge ceases or until a minimum of 5 grab samples have been collected.

The basis for the limitations codes are:

1. Federal Effluent Guidelines
2. Best Professional Judgement
3. Water Quality Standards
4. Other (Jackson River Benthic TMDL)